IN THE CLAIMS:

Please find below a listing of all pending claims. The statuses of the claims are set forth in parentheses. For those currently amended claims, underlined emphasis indicates insertions and ~~strikethrough~~ emphasis (and/or double brackets) indicates deletions.

1. (cancelled)

2. (previously presented) The method according to claim 6, wherein the LU decomposition is executed in parallel by each processor of each node in a recursive procedure.

3. (currently amended)The method according to claim 6, wherein in said update step, while computing part of a block of the matrix which is not yet LU-decomposed ~~a row block~~, each node transfers data that belongs to a computed block and is needed to update other blocks, to other nodes in parallel to the computation.

4. (previously presented)The method according to claim 6, wherein said parallel computer is a SMP node distributed-memory type parallel computer in which each node is a SMP (symmetric multi-processor).

5. (currently amended) A matrix processing device of a parallel computer in which ~~a plurality of processors and~~ a plurality of nodes, each including ~~memory~~ a memory and a processor are connected through a network, wherein the plurality of nodes includes n nodes, comprising:

a first allocation unit ~~dividing~~ to divide an array A(1:k,1:k) of a matrix to be processed by the number n of nodes to create n divided matrices and ~~assigning~~ to assign ~~divided matrices~~ subarrays A(1:k/n,1:k), … , A(k(n-1)/n:k, 1:k) to the divided matrices, ~~dividing~~ to divide one of the subarrays into a narrow block by an integer

m, and wherein each ~~node's reading~~ node is to read data from memory so that a first narrow block is placed in a first node of the plurality of nodes, a second narrow block is placed in a second node of the plurality of nodes, ... , a m-th narrow block is placed in a (mod(m-1,n)+1)-th node of the plurality of nodes, wherein mod(m-1,n) is modulo of m-1 divided by n;

a separation unit ~~eliminating~~ to eliminate data corresponding to a diagonal ~~blocks~~ block A(nbase:nbase+m, nbase:nbase+m), where nbase being a position of an upperleft element of the diagonal block and m ~~are~~ being ~~intergers~~ integers, from data of the narrow blocks placed in each node, at each node;

a second allocation unit to redundantly ~~allocating~~ allocate same data as the diagonal block which is eliminated at each node to each node commonly;

an LU decomposition unit ~~applying~~ to apply LU decomposition to both the diagonal block and ~~the~~ an allocated block by the first allocation unit in parallel in each node; and

an update unit ~~updating~~ to update the block of the matrix which is not yet LU-decomposed, using an LU-decomposed block, at each node[[.]],

thereby realizing fast LU decomposition of a matrix effectively using a hardware of the parallel computer.

6. (currently amended)A matrix processing method of a parallel computer in which ~~a plurality of processors and~~ a plurality of n nodes each including ~~memory~~ a memory and a processor are connected through a network, comprising:

dividing an array A(1:k,1:k) of a matrix to be processed by the number n of nodes and assigning ~~divided matrices~~ subarrays A(1:k/n,1:k), ... , A(k(n-1)/n:k, 1:k) to divided matrices, dividing one of the subarrays into narrow block by integer m, and each node's reading data from memory of each node so that a first narrow block is placed in a first node, a second narrow block is placed in a second node, ... , a m-th narrow block is placed in a (mod(m-1,n)+1)-th node, wherein mod(m-1,n) is modulo of m-1 divided by n;

eliminating data corresponding to a diagonal ~~blocks~~ block A(nbase:nbase+m, nbase:nbase+m), where nbase being a position of an upperleft element of the diagonal block and m are ~~intergers~~ integers, from data of the narrow blocks placed in each node, at each node;

redundantly allocating same data as the diagonal block which is eliminated at each node to each node commonly;

applying LU decomposition to both the diagonal block and ~~the~~ an allocated block by the assigning step in parallel in each node; and

updating the blocks of the matrix which is not yet LU-decomposed, using an LU-decomposed block, at each node[[.]],

thereby realizing fast LU decomposition of a matrix effectively using a hardware of the parallel computer.

7. (currently amended)A computer-readable storage medium on which is recorded a program for enabling a computer to realize a matrix processing method as a parallel computer in which ~~a plurality of processors and~~ a plurality of nodes each including ~~memory~~ a memory and a processor are connected through a network, the method comprising:

dividing an array A(1:k,1:k) of a matrix to be processed by the number n of nodes to create divided matrices and assigning ~~divided matrices~~ subarrays A(1:k/n,1:k), … , A(k(n-1)/n:k, 1:k) to divided matrices, dividing one of the subarrays into narrow block by integer m, and each node's reading data from memory of each node so that a first narrow block is placed in a first node, a second narrow block is placed in a second node, … , a m-th narrow block is placed in a (mod(m-1,n)+1)-th node, wherein mod(m-1,n) is modulo of m-1 divided by n;

eliminating data corresponding to a diagonal ~~blocks~~ block A(nbase:nbase+m, nbase:nbase+m), where nbase being a position of an upperleft element of the diagonal block and m are ~~intergers~~ integers, from data of the narrow blocks placed in each node, at each node;

redundantly allocating same data as the diagonal block which is eliminated at each node to each node commonly;

applying LU decomposition to both the diagonal block and ~~the~~ an allocated block by the assigning step in parallel in each node; and

updating the blocks of the matrix which is not yet LU-decomposed, using the LU-decomposed block, at each node[[.]],

thereby realizing fast LU decomposition of a matrix effectively using a hardware of the parallel computer.